COMPIX® Meditherm 520
Thermal Imaging System
with
Threshold Detection

Installation and Operating Instructions

Version 2.1
3/21/2013

Please check **http://www.compix.com/TemperatureMonitoringHelp** for latest updates.

NOTICE

This manual is intended solely to provide instructions for operation of the Compix® Meditherm 520 Temperature Monitoring Station and the accompanying software. Compix reserves the right to change the information contained in this manual without notice. No warranty, expressed or implied, is made regarding the accuracy of the information in this manual at any time following its release or for any purpose other than as a guide to operation of Compix® Systems.

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Table of Contents

TABLE OF CONTENTS **2**

1. INTRODUCTION **3**

Mounting *4*

3. INSTALLATION AND SET UP **5**

SOFTWARE INSTALLATION 5
HARDWARE INSTALLATION 6
SETTING UP THE MEDITHERM 520 8
Parameter Setup Screen *9*

4. OPERATING THE TEMPERATURE MONITORING STATION **12**

OPERATING THE MEDITHERM 520 FOR THE FIRST TIME 12
Starting out *12*
OPERATING PROCEDURES 13
AUTO SAVE AND REVIEW MODE 16

5. OPERATING SUGGESTIONS **17**

FOCUSING 17
TEMPERATURE MEASUREMENT 17
1. MINIMIZE EXTERNAL SOURCES OF INFRARED ENERGY 17
2. SAVING AND EXPORTING IMAGES 17

6. MAINTENANCE **18**

CALIBRATION 18
CLEANING 18
STORAGE AND TRANSPORTING 18

7. USER SUPPORT **19**

8. COMPIX® MEDITHERM 520 LIMITED WARRANTY **20**

LIMITATIONS 20
SHIPPING 20

APPENDIX A. **21**

ROLL-ABOUT STAND 21
Assembly *21*
Operation *21*

1. INTRODUCTION

The Meditherm 520 is a precision temperature measuring system. It is comprised of an IR Camera, Meditherm 520 Threshold Software, and a personal computer. It is intended for operation as an Infrared based temperature threshold detection/alarm system.

The rest of this manual describes the Compix® Meditherm 520 system and its operation in more detail.

NOTE

Before attempting to operate the system you should read sections:

2. SYSTEM DESCRIPTION AND OPERATING REQUIREMENTS.
3. INSTALLATION AND SET UP.
4. ACQUIRING THERMAL IMAGES.

Figure 1

The Compix® Meditherm 520 includes a **220-series camera** (see Figure 1), the **Threshold Detection Software** and all necessary power modules and cables. The 220-series camera may be any of the following: Meditherm IRIS 7.5, Compix Model 222, or Compix Model 222-OEM.

Presently, the Meditherm 520 is designed to work with personal computers (PCs) running Windows XP, Windows VISTA, Windows 7, or Windows 8 with at least one USB 2 port. The optimal display settings are 800 x 600 pixels with "Preserve aspect ratio" selected.

Other than the personal computer, no additional accessories or supplies are required. Optional accessories available include a selection of camera and laptop stands, carrying cases, and alternate lenses.

The Meditherm 520 system has been designed to operate in engineering, factory, office or similar sheltered field environments.

Mounting

The camera may be mounted on a tripod for stability or convenience. The standard fitting is a ¼"-20 threaded female connector mounted on the bottom of the camera.

The camera may be located as far as fifteen feet (5 meters) from the Personal computer. A 15-foot USB cable (type A/B M/M) is provided for connecting the camera to the computer.

NOTE

There are no components inside the camera designed for user service. Opening the camera may void the warranty.

3. INSTALLATION AND SET UP

Unpack the system. Inspect the camera for physical damage. If you find shipping damage, stop, inform the carrier and call Compix Customer Service. If possible, store the shipping carton and packing materials for future use.

There are **two distinct steps in the installation procedure**: software installation and hardware installation. **You should perform, in either order, each of these steps before proceeding to the verification phase.**

Software Installation

The CD accompanying the system contains the installer for the Temperature Monitoring application software and the necessary drivers to support the camera. Before proceeding, change the resolution of your monitor to 800x600 pixels. This will ensure that the picture isn't distorted when displayed.

Install the Threshold Detection Software

- Double-click "Install_Compix_5221.msi" **from the root directory of the installation disk. This installs the Temperature Monitoring application software**
- **Copy the files** "Language.ini" and "Double-click to reset CODE.reg" to the same folder in which you installed the application software, usually "c:\Program Files\Compix 5221". Copy "User Guide.pdf" to the My Documents folder. Copy the Internet shortcut "Help for Temperature Monitoring" to the My Documents folder. Refer to "Install Notes.txt" for a summary of the installation procedure and for any last-minute revisions.

Hardware Installation

Install the hardware and drivers

Connect the USB cable between the computer and the 220 Camera. Connect the power module to a suitable source of 110-250VAC 50-60 Hz power and the low voltage output cable coming from the power module to the DC power jack on the rear of the camera.

The Installation Backup Disk for the 520 Temperature Monitoring Station contains the necessary USB drivers. Make sure that CD is in your CD drive before proceeding.

- When prompted to “Install New Hardware”, proceed with the default options. This should happen 2 times depending on the computer’s OS. There will be a series of screens similar to the one shown below.
- In the first screen, select “Do not search ...” and click Next.
- In the second screen (shown below), if you are installing from a CD and are using Windows XP, select “Install automatically ... “ and click Next.

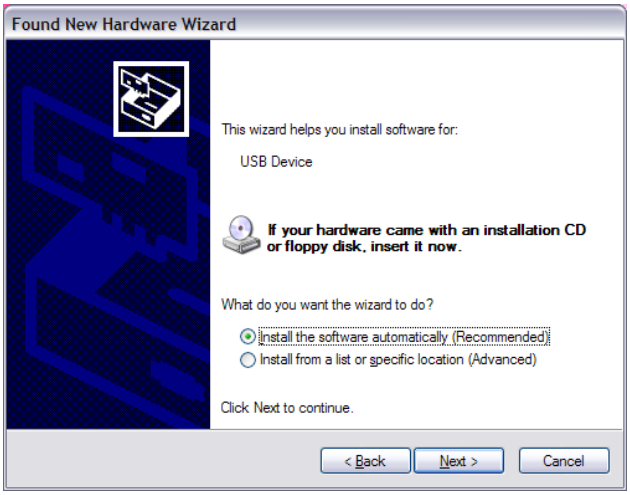

Found New Hardware Wizard
This wizard helps you install software for:
USB Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Figure 2a

If you are not installing from the software distribution CD, you will need to navigate to the folder in which you have saved the driver files. On Vista, you will need to navigate to the Drivers folder on the installation CD. In both cases, select “Install from a list of specific locations (Advanced)” in the window above before clicking Next. In the navigation window illustrated below, navigate to the Drivers folder of the distribution folder or drive.

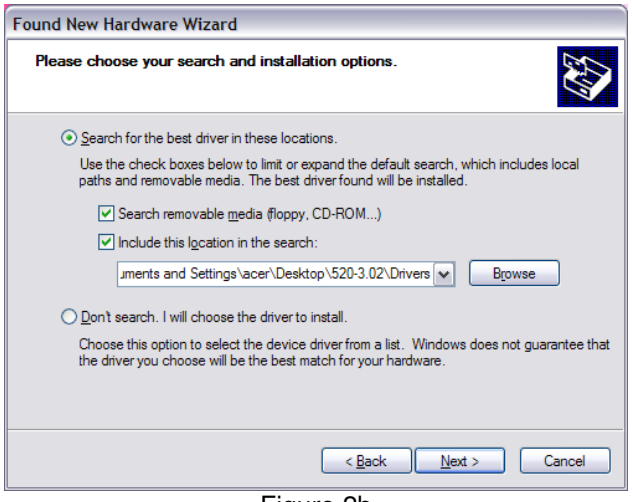
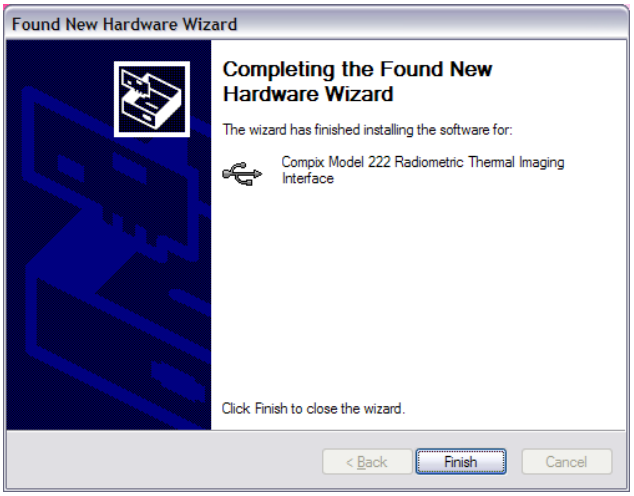

Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
...ments and Settings\acer\Desktop\520-3.02\Drivers
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

Figure 2b

- After you click next in the preceding window, a window will appear dealing with Microsoft “Logo testing” or trusting the source of the driver software (depending on the operating system you are using). Select “Continue Anyway” or “Yes, trust this software” or other appropriate response to continue the installation.

Hardware Installation
The software you are installing for this hardware:
Compix Model 222 Radiometric Thermal Imaging Interface
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation
Figure 3

- After installation is finished, press the finish button.

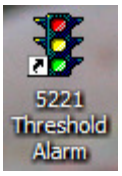

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Compix Model 222 Radiometric Thermal Imaging Interface
Click Finish to close the wizard.
< Back
Finish
Cancel
Figure 4

- When you start the Temperature Monitoring application software for the first time, a second instance of the Found New Hardware Wizard will begin. Respond to those prompts in the same way as above.

If you are installing the camera on a Windows XP system, you will need to repeat the above process on each USB port. If you do not do this now, then it may be inconvenient to do so later if the installation CD is not available. If you are installing on Windows VISTA, then there will merely be a slight pause when you connect to a different USB port and VISTA will do the hardware installation for that port automatically.

Setting up the Meditherm 520

Click on Start. From the **Programs** menu select **5221 Threshold Alarm** or **double-click the icon on the desktop ---->**



The first time you start the Temperature Monitoring software you will see a message window asking you to enter an access code.

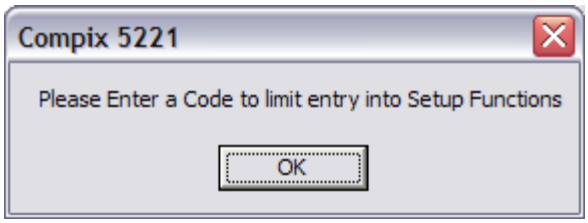


Figure 5

When you click OK, you will see the screen below. You will need to create a security code of from 4 to 16 characters and enter it by clicking on this keypad.

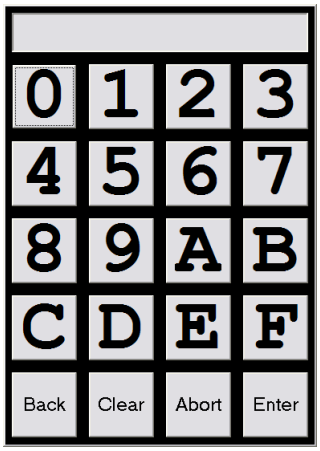


Figure 6

This code is designed to protect the application software from accidental or unauthorized changes to the setup parameters, and to limit operators' ability to access other features of the computer. Once the program is started, this code will be needed to exit the program or change the operating parameters. Normally, the computer will be configured to start the program automatically when it is turned on as described below.

After successfully entering a code, the parameter setup screen will be visible as shown in Figure 7. The next several paragraphs discuss each of the groups of buttons and parameters available here. For a quick first pass at setting these parameters, it is suggested the threshold value be set between 34 and 35 degrees, and a alarm sound should be selected. Remaining parameters can be adjusted later as needed.

Click "Save Settings". If you do not use "Save Settings", your changes will be lost. Clicking Save Settings will also start the main operating phase of the software. You may return to the parameter setup by clicking the **Menu** button from the main window, and then selecting SETUP. You will be prompted to enter the code you just created as described above.

Parameter Setup Screen

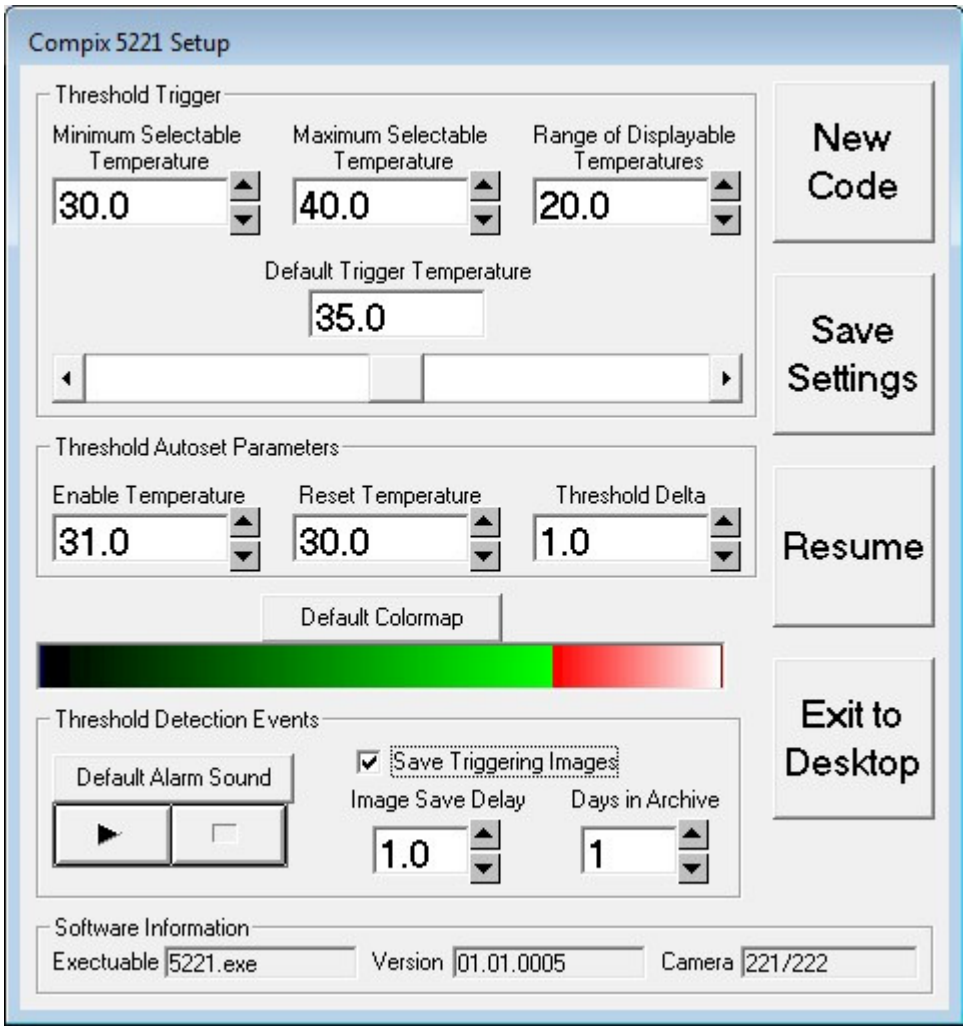


Figure 7

Threshold Trigger Group

- Minimum Selectable Temperature. This is the lowest value to which the "Threshold Temperature" may be adjusted.

- Maximum Selectable Temperature. This is the highest value to which the "Threshold Temperature" may be adjusted.

- Range of Displayable Temperatures. This sets the fixed distance between the lowest and the highest temperatures that will be displayed in the colors depicted by the color shown below the "Default Colormap" button. The actual value of the bottom and top of this range will be controlled by the Threshold setting. The value currently in use for the Trigger Temperature (or Threshold) is always at the 75% point between the bottom and top of the range. For example, if the Range of Displayable Temperatures is set at its default value of 10, and the Trigger Temperature is adjusted by the operator to a value of 32.5, then the bottom of the range will be 25 and the top will be 35. Another example: for a Range of 20, if the Trigger Temperature is 36, the bottom will be 21 and the top will be 41. (75% of the Range of 20 is 15, and 15 below 36 is 21.)

- Default Trigger Temperature. Operators are expected to be trained to adjust the value of the Trigger Temperature in response to current conditions. This parameter merely sets the value of the Trigger Temperature when the program first begins. Adjust it using the slider bar, or by editing individual digits of the displayed value.

Threshold Autoset Parameters Group

- Enable Temperature. In Autoset mode, the program attempts to learn from a series of observation based on subjects passing though the field of view of the camera. The Enable Temperature is the temperature value above which a subject is detected as having come into view. Once a subject is detected, the maximum temperature detected in the camera's view is tracked and the highest value it reaches is used to characterize that subject. As long as Autoset is active, the Trigger Temperature is adjusted after each subject passes by taking the weighted average of the current Trigger Temperature and the maximum value recorded for the detected subject PLUS the value of Threshold Delta. The weighting is 90% of the current value and 10% of the last subject's value.

- Reset Temperature. When there is nothing within the field of view of the camera that exceeds the "Reset Temperature" the program concludes that the subject has passed out of view. There should be at least a small gap between the Enable Temperature and the Reset Temperature to avoid double counting the same subject.

- Threshold Delta. This determines how much above the average subject temperature to set the Trigger Temperature. For example, if Autoset has determined the average subject's peak temperature is 34.7 Deg-C and if the Threshold Delta is 1.0, then the Trigger Temperature will be 35.7 Deg-C

Colormap

- Default Colormap (button). The operator may change the colormap by clicking the "Colors" button at any time. This parameter selects which colormap will be used when the program is first started. Clicking this button will open a window to navigate to a colormap file. The folder containing a variety of colormaps is "c:\Program Files\Compix 5221\Colormaps". Open a file from that folder and its colormap will be displayed below this button. The gradually lightening green scale that switches to red for Over Range (named "Greenscale_RedOR.colormap) is the one generally found most useful. These colormaps are simple text files and advanced users may edit them to produce their own custom colormaps.

Threshold Detection Events Group

- Default Alarm Sound (button). Clicking this button opens a window to navigate to a .wav file to be used for the Alarm sound. The folder containing a variety of suitable .wav files is "c:\Program Files\Compix 5221\Alarms". After opening a file from this (or any other location), the Alarm sound may be tested by clicking the "play" button (triangle symbol) below the Default Alarm Sound button. Adjust the loudness using the computer's volume control.

- Save Triggering Images check box. If this box is checked, images that cause alarms will automatically be saved. Checking this box also enables the following two controls.
- Image Save Delay. This value, in seconds, controls the length of time after an image is saved before another alarm event can cause another image to be saved.
- Days in Archive. Saved images older than the specified number of days will be automatically deleted from the computer's hard drive. A value of zero is valid and would cause any images from the prior day to be deleted, thus saving images for only the current day. The maximum is 10 days. If it is necessary to save images longer than 10 days, the system administrator will need to manually move those images to another folder or storage media from time to time.

Control Buttons

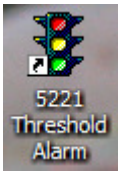
- New Code button. Click this button to change your access code.

- Save Settings button. Be sure to click this button if you have made any changes to any of the parameters described above. If you do not use the Save Settings button, you will lose the changes after you exit. When the Save Settings button is used, the current set of parameter will become the initial set of parameters to be used the next time the Threshold Detection software is launched. Using the Save Settings button automatically resumes normal operation.

- Resume button. Clicking this button will resume normal operation without saving any parameter changes.

- Exit to Desktop button. Clicking this button will terminate the Temperature Monitoring Station software and enable you to use the general functions of the computer accessible from its desktop. If you wanted to shutdown

the computer, you could have used the **Off** button instead of the setup button when you clicked the **Menu** button from normal operation.



After the initial adjustment of parameter, the system is now ready for operation. Be sure to click **Save Settings** when you are done. Subsequent launching of the application by clicking the desktop icon shown below will not bring up the setup screen. To access the setup screen again, start the application, then Click the **Menu** button, then click SETUP.

When you are satisfied that the installation of the software is complete and satisfactorily configured, you may want to setup the computer so that it will start automatically whenever the computer is turned on. To do this, copy the shortcut icon illustrated above to the folder, "c:\Documents and Settings\All Users\Start Menu\Programs\Startup\" or equivalent locations in other environments or on other operating systems.

4. Operating the Temperature Monitoring Station

Once you have completed the set-up steps of section 3, the system is ready for operation.

Operating the Meditherm 520 for the first time

Start Meditherm 520 software by clicking **Start**, then **Programs**, then click on "**5221 Threshold Alarm**" or double-click its desktop icon

The threshold display as shown in Figure 8 will be on screen.

The color bar above the image window shows the range of temperatures the camera is displaying. The threshold point is the point at which an alarm is initiated, and the point where the color bar abruptly changes from green to red.

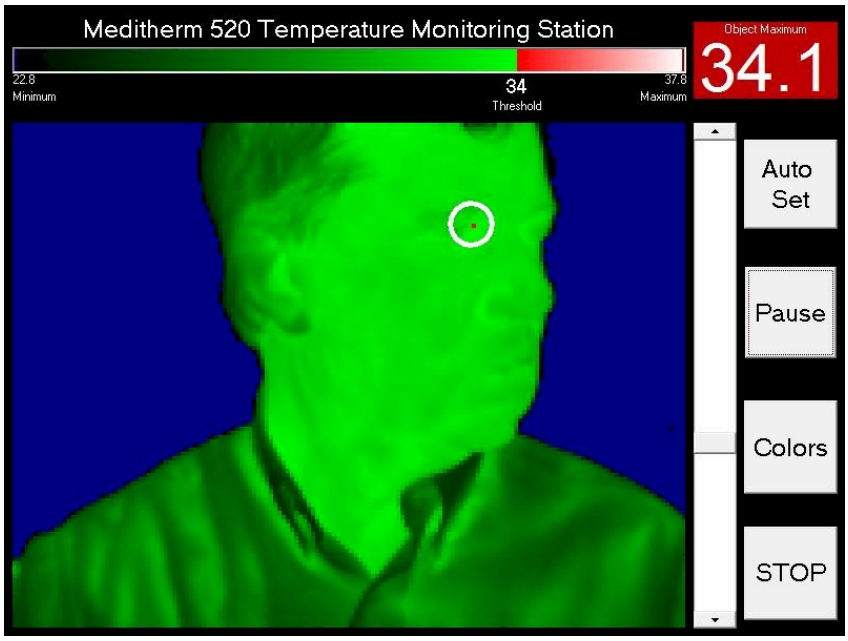


Figure 8

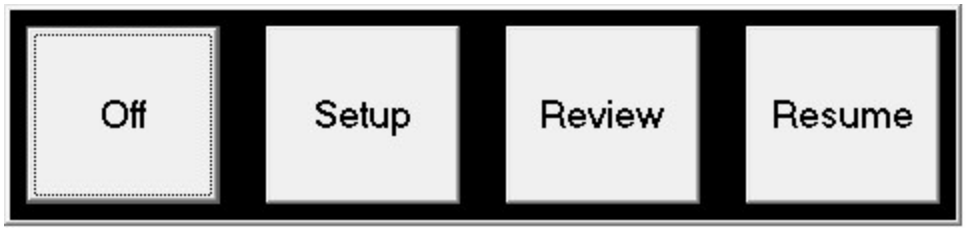
Starting out

- Point the camera at the scene to be monitored. Rotate the lens to achieve optimum focus.
- Set the threshold to the desired alarm temperature, typically 1 or 2 degrees above normal subjects' peak temperature, or about 35 to 36 Degrees Celsius.

The system is now ready for operation.

Operating Controls and Buttons

- The **Threshold Temperature (**also referred to as the **Trigger Temperature)** is set by moving the slider up or down until the desired alarm point is set.
    - Moving the bar up makes the system more sensitive and increases the number of Alarm events by lowering the value of the Trigger/Threshold temperature.
    - Lowering the slider makes the system less sensitive and produces fewer Alarm Events by increasing the Trigger/Threshold temperature.
- The **Auto Set** button puts the system into Auto Set mode. Using Auto Set is described in further detail below.
- The **Pause** button freezes the display to enable a scene or subject to be examined further. It can also be used to stop the occurrences of Alarm sounds when the system is not in use.
- Clicking the **Colors** button will toggle through the available colormaps.
- The **Menu** button can be used to end Temperature Monitoring. When the Menu button is clicked, the small window shown below will pop up giving you the choice to turn off the computer, enter the Setup screen, enter the review mode to examine recently saved images, or resume normal monitoring operation.



Operating Procedures

Successful use of the Temperature Monitoring system may depend on a number of factors. The system has been designed with enough flexibility to accommodate a wide range of situations. Factors such as room temperature, atmospheric pressure, humidity, air-flow and near-by sources of heat can affect operation. These factors affect operation both in the operating environment, and in the environment from which the subjects have recently been located. Therefore, there is no single setting of the Trigger threshold that will always be optimum. Operators will need to be trained to understand how the situation may change over time, and from day to day, and make appropriate adjustments to the Threshold trigger or operating procedures.

Proper use of any of these techniques depends on understanding how the Trigger Temperature setting and display work together. In all of the following discussion and examples, the system is presumed to be operating with

- **The default temperature range of 10°C from bottom to top of the color range.**
- **The default colormap, the gradually lightening green scale that switches to red for Over Range (named "Greenscale_RedOR.colormap)**

The Trigger Temperature defines the 75% point of the color scale. Since the Trigger Temperature is at the 75% point, there will be a span of 2.5°C between the Trigger Temperature and the maximum displayed temperature in these examples.

The transition from green to red also occurs at the 75% point in the default color scale. As the temperature increases above the Trigger Temperature, the red becomes lighter throughout the “over range” region. Finally, when the temperature exceeds the top of the color scale, it is colored a dark red. See Figure 8 above.

Any surface whose temperature exceeds the maximum of the range will be regarded as being equal to the maximum. Thus, if the Trigger temperature is set too low -- for example set to 30°C then the maximum of the temperature scale will be 32.5°C. Most of the face of most subjects will be above that value, and will appear in dark red as shown below. The maximum temperature the system can report for any subject will be 32.5°C which is not high enough to make a useful distinction between normal and fevered subjects. **Therefore, it is critical to use a Trigger Temperature no lower than the value, usually between 34.5 and 35°C, of normal healthy subjects.** To improve the selectivity of the system, it is typical to use a Trigger Temperature of at least 1.0°C above the peak temperature of healthy subjects.

It has been found that the peak temperature observed on the face of healthy subjects is typically 2.0 to 2.5°C below the normal core temperature for healthy subjects which is 37.0°C (98.6°F). That peak temperature typically occurs in the eye sockets on either side of the bridge of the nose.

There are three general techniques with which the Temperature Monitoring System can be operated.

1. Fixed Threshold Alarm technique.

This is the most typical technique, in which the Trigger Threshold is set to produce the audible alarm and draw a circle around the portion of the image that exceeds the Trigger Threshold. This technique uses the least amount of technical skill on both the system administrator and the operator. To use this technique reliably, select a threshold setting that does not produce an audible alarm and graphic circle drawn around the hottest point for the majority of subjects. Typically, this will be a value of 35.5 to 36.5°C.The operator will need to know how to adjust the threshold up and down to adapt to changing environmental and situational changes. This may necessitate adjusting it downward briefly until most subjects cause an alarm, and then moving it back up by 1.0 to 1.5°C.

2. Relative Area of above normal temperature technique.

This technique may be useful when environmental or situational circumstances are erratic. In this technique, the operator is called upon to exercise a greater degree of skill and judgment. The Trigger temperature is adjusted to a lower value than in technique 1, such than average (or even the majority of) subjects produce alarms. The alarm is not actually relied upon in this technique, and the administrator having access to the setup panel may choose to turn off the alarm, or adjust the system speaker volume to zero.

Normal healthy subjects will produce an alarm marked by the graphic circle in just a few small areas, typically the eye sockets. Slightly warmer subjects will have larger blotches of red and pink displayed, with the graphic circle marking the warmest area, and the value of that peak temperature will be displayed in the upper right corner.

Subjects with a significant fever will have very large areas in red or pink, and may have areas shown in the dark red over-range temperature. An example is shown below (Figure 9).

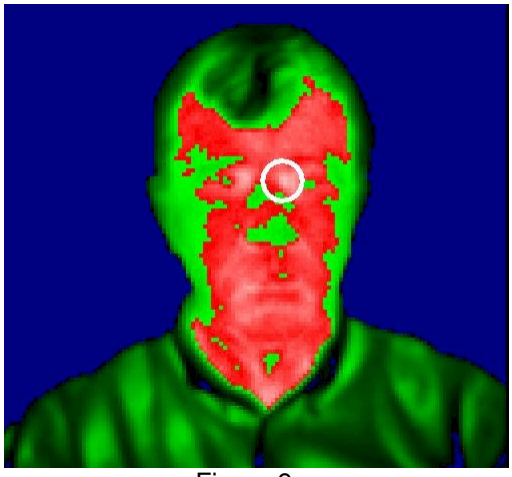


Figure 9

The image shown below illustrates a FAULTY THRESHOLD SETTING. In this example, the Trigger/Threshold temperature is set too low. With a Threshold/Trigger temperature of only 31.5℃, the maximum of the color scale "**A**" is only 34.0℃. Because of this, no temperatures above 34.0 are represented, and therefore the Object Maximum "**B**" is reported as just 34.0 when in reality it is much higher. A further consequence, and warning indication are the large areas of Dark Red which is used to represent regions that are at or above the maximum reportable temperature.

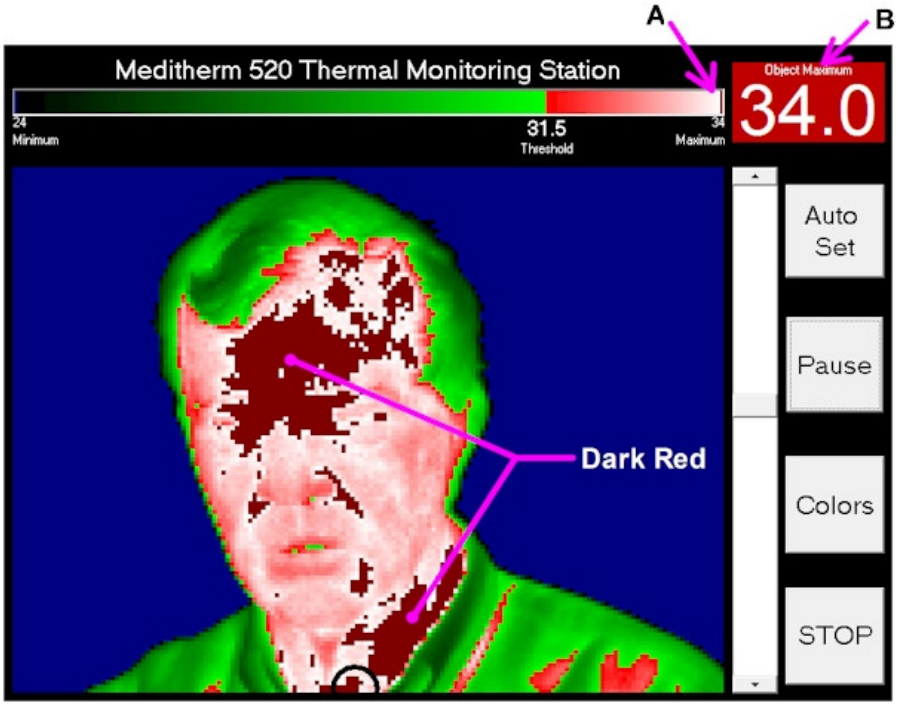


Figure 10

3. Automatic Threshold Adjustment Technique

This technique requires the most skill and care in order to use it properly. However, when used properly it may require the least amount of ongoing adjustment.

To put the system in Automatic mode, click the "Auto Set" button. The Auto Set button will flash slowly as long as it is operating in Automatic mode. To use the Automatic mode wisely, it is helpful to understand how it works.

The system attempts to detect the passage of each individual subject. In order to do this, there must be enough space between subjects passing through the view of the camera to allow the detection process to function. Two of the "Threshold Autoset parameter" control the subject detection process: When any point in the camera's view exceeds the Enable Temperature parameter (default value of 30°C), the system assumes a new subject has come into the camera's view. As long as the subject is in view of the camera, the peak temperature of the subject is tracked. The maximum value of that subject is noted and used in the Threshold adjustment calculation. When no portion of the image exceeds the Reset Temperature parameter (default value of 29°C) that subject is assumed to have passed out of view.

The new value of the *Trigger/Threshold* temperature is calculated by taking the weighted average of the current *Trigger/Threshold* temperature and the noted peak temperature of the subject that passed. The weighting is to take 90% of the current value of the *Trigger/Threshold* temperature and 10% of the quantity formed by adding the *Threshold Delta* parameter (default value of 1.0°C) to the noted peak temperature of the subject that just passed.

The intent of this algorithm is to maintain a *Trigger/Threshold* temperature that is *Threshold Delta* above the average peak temperature of subjects passing through the camera's view. This algorithm will also automatically adjust for environmental changes affecting the perception of subject's temperature.

To further explain this process, consider the following example: The *Trigger/Threshold* temperature is currently 35.0°C, and a subject with a peak temperature of 36.0 passes by. Adding the Threshold Delta of 1.0 produces a value of 37.0. Then, 90% of 35 is added to 10% of 37 to produce a new *Trigger/Threshold* temperature of 35.2 . If the majority of subsequent subjects have peak temperatures of 36.0, the *Trigger/Threshold* temperature would gradually be adjusted upward toward 37.0°C

If subjects do not pass through one at a time, the system will not be able to distinguish one subject from the next, and whenever a gap does occur, it will use the maximum of all the subjects that passed since the last gap. If subjects are clustered in groups of no more than three or four, this will probably not have too much affect on the validity of the algorithm, but it will tend to produce a slightly higher than optimum value for the *Trigger/Threshold* temperature. **The operator must periodically check the current value being used for the *Trigger/Threshold* temperature to make sure it is within a reasonable range.**

The third technique can be used in combination with the first technique by operating the camera for a short period of time in the Automatic mode. After at least ten subjects have passed, click the Auto Set button again to turn off the Automatic mode, leaving the *Trigger/Threshold* temperature at the value determined while in Automatic mode.

Auto Save and Review mode

To adjust the parameters controlling Auto Save, refer to the description of the **Parameter Setup Screen**.

When AUTOSAVE is active, images are saved in a sub folder of the current user's "My Documents" folder named "520_Saves". Each saved image will occupy approximately 1.5Mbytes of disk storage space. They are saved as .bmp files named with date and time of day using the ISO8601 standard. The ISO8601 pattern is **YYYY-MM-DD hh.mm.ss.ff** where YYYY is the year, MM is the month, DD is the day, hh is the hour, mm is the minutes, ss is the seconds, and ff is the decimal fraction of the second.

To review saved images, click the **Menu** button in the main operating window. In the resulting sub-menu, click the **Review** button. The screen illustrated below will replace the main operating window.

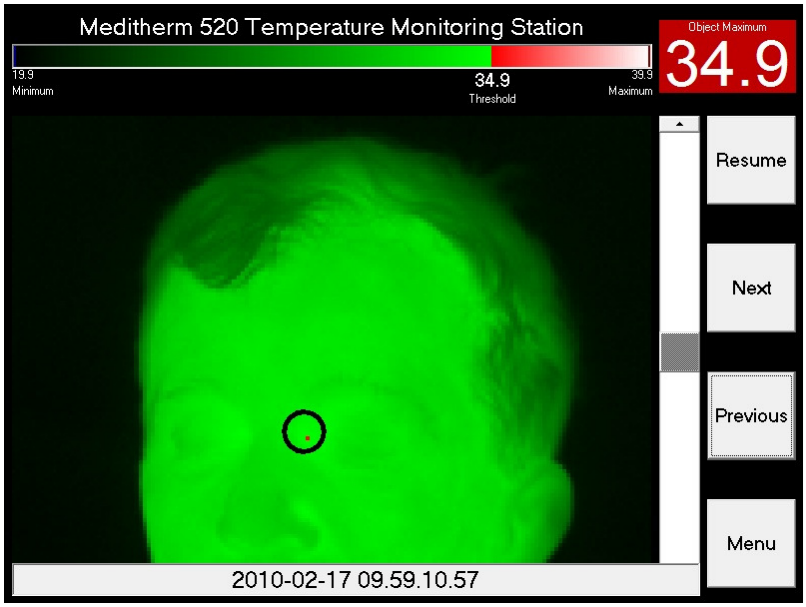


Figure 11.

The first image shown upon entering the review mode will be the most recent image saved. This window differs from the main operating window in that the file name depicting the date and time is displayed at the bottom, and the buttons have different functions. Repeated use of the **Previous** button will sequence backward through time, showing previous auto-saved images. The **Next** button will move forward through time. Clicking the **Resume** button will resume normal scanning in the main operating window. The **Menu** button has its usual meaning as in the main operating window.

5. OPERATING SUGGESTIONS

Focusing

The Meditherm 520 camera utilizes a manual focusing mechanism. The camera can be focused at distances as close as 1 meter and out to 15 meters (effectively infinity). In most situations, adjusting for best focus on subjects at 2 to 3 meters will provide satisfactory focus over the useful range of from 1 to 15 meters.

Temperature Measurement

The Compix® Meditherm 520 is a sensitive instrument that has the capability to detect small temperature differences. However, non-contact temperature measurements are affected by a number of variables that can change the accuracy of temperature measurements. The following techniques will help improve the accuracy of measurements made with the Meditherm 520 system.

1. Minimize external sources of infrared energy

- The Compix® Meditherm 520 measures temperature by detecting emitted infrared energy, i.e. the infrared energy generated by the target. Objects also reflect infrared energy from their surroundings.

- The Meditherm 520 system (or any other infrared system) cannot tell the difference between reflected and emitted energy. Therefore, reflected energy is a potential source of error. Some reflected infrared (IR) energy is unavoidable and the Meditherm 520 will automatically compensate for typical levels of external IR energy, which are uniformly distributed over the target. Nevertheless, it will be helpful to minimize significant sources of external IR, particularly those that may not be uniformly distributed.

- Other sources to avoid are direct sunlight coming through a window and shining on the target, or heat from nearby electronic devices. A general rule of thumb is that if you can feel heat from a source near the target, then it will affect the accuracy of the image.

2. Saving and exporting images

- To save a copy of the screen, use the key combination SHIFT – “Print Screen.” Then, exit the Temperature Monitoring application. Open a graphics program such as Paint (which can be found in Programs - Accessories program group). Use Edit - Paste to copy the captured screen image, and then use the File – “Save As” to make a file copy of the image.

- You may be able to use Paint to directly print the image, or “Insert” the image as a picture in a word processing application such as Microsoft WORD, or Open Office WRITE.

6. MAINTENANCE

Calibration

It is recommended that instrument performance be verified once a year. The instrument should be compared against a calibrated blackbody source. It is recommended the instrument be returned to the factory for repair and recalibration.

⚠ CAUTION

Never touch the lens or allow any object to touch or strike the lens.

Cleaning

Small amounts of dust or lint on the lens surface will have little or no effect on the performance or calibration. It is possible to degrade the lens surface by improper or excessive cleaning techniques. Use the following cleaning techniques carefully and not too frequently.

To remove loose dust or debris, use a gentle stream of dry air. Aerosol-type cans of clean dry air available at camera and electronic stores are suitable for this purpose. For more persistent loose dust or debris you may use a camelhair brush or soft cotton swab ("Q-tip"). **Do not use lens tissues: Lens tissues intended for eye glasses contain chemical additives and lens tissues available in camera stores are often not soft enough.**

Avoid touching the lens surface with your fingers. If you do need to clean off fingerprints or other more resistant material, use clean distilled water or acetone to dampen a soft cotton swab, gently dab, and swipe the spot or fingerprint. If you look at the lens surface under magnification you will probably notice a few tiny defects in the coating that have no measurable effect on the performance of the lens; But if you mistake such a defect for debris and try to remove it you can make the defect larger.

Storage and transporting

The container in which the Compix® Meditherm 520 was originally shipped in should be used for storage or transporting. If this is not possible, make sure adequate protection is provided to avoid damage while in storage or during shipping. This can be accomplished by providing at least a two inch barrier of foam on top, bottom, and all sides of the camera.

Keep the lens cover in place whenever the camera is not in use, or is in storage or being transported. If you cannot find the lens cover, wrap the entire camera in plastic film. Take care to stretch the plastic film over the lens and avoid letting the plastic film come in direct contact with the lens.

7. USER SUPPORT

User support is available by phone, mail, e-mail or in person at Compix' offices in Lake Oswego, Oregon. Support will normally be available from 8:00 A.M. to 5:30 P.M. Pacific Coast Time, Monday through Friday, excluding national holidays.

User support is generally free of charge on issues relating to interpretation of this manual, the proper operation of the system, routine maintenance and warranty service.

Compix reserves the right to determine, at its sole discretion, the extent of user support made available to any user. A user may be asked to furnish proof of ownership of a Compix® Meditherm 520 system before receiving support.

For support, contact Compix by e-mail at http://www.compix.com/contak.htm, by phone at **(503) 639-8496**, by FAX at **(503) 639-1934,** or by mail at:

Compix Incorporated
Attn.: User Support/PC2000
P.O. Box 885
Tualatin, OR 97062-0885

When contacting Compix, identify yourself as a user of the Compix® Meditherm 520 system and ask for User Support. It may be helpful for you to have the serial number of your Meditherm 520 system.

Visit http://www.compix.com/ for technical articles, price lists, product photos, and other information on current products.

If you want to visit us in person, please call us at the number above for directions and to make sure the person best equipped to help you will be available when you arrive.

Our office location/ shipping address is:

Compix Incorporated
15824 SW Upper Boones Ferry Rd
Lake Oswego, OR 97035-4066

8. Compix® Meditherm 520 LIMITED WARRANTY

Compix warrants to the original buyer that this product shall be free of defects in materials and workmanship and will meet its published specifications for a period of one year following the date of shipment (the Warranty Period). Warranty service will be provided for this product if it is returned to Compix Incorporated, shipment prepaid, during the warranty period. Compix will, at its option, either repair or replace the product at no cost to the buyer, or refund the original purchase price of the product.

Limitations

This warranty shall not apply to defects resulting from accident, misuse, improper maintenance or unauthorized modifications.

The remedies described above -- repair, replacement or refund -- are the buyer's sole and exclusive remedies. Modifications or extensions of this warranty shall be effective only when made in writing, signed by an officer of Compix Incorporated.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. COMPIX SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

This warranty gives the buyer specific legal rights. The buyer may also have other rights which vary from state to state.

Shipping

During the Warranty Period, Compix will reimburse the buyer for the buyer's reasonable shipping costs for products returned to Compix from locations in the United States and Canada. Compix will also pay the shipping charges to return the product to the buyer.

Before returning a product for service, contact Compix Customer Service for return authorization.

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15824 SW Upper Boones Ferry
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APPENDIX A.

Roll-about stand

Assembly

There is a slide show named “Stand step-by-step.pdf” in the “Meditherm 520 Documents” folder of the software distribution disk which illustrates in detail the various assembly steps associated with the roll-about stand.

If the stand is not already assembled, attach arm assembly(s) to camera pole. Refer to illustration Figure 1 at the beginning of this manual. Hand-grip is down with mounting plate facing up for use with the computer support tray. Hand-grip is up for use with the camera.

Camera attachment

Attach the camera via the ¼ - 20 nut to the ¼ - 20 thumbscrew of the table top stand.

Computer tray attachment

Insert the mounting stud in the hole of the adjustable arm and securely tighten the wing nut. Adjust height to suit the intended operation.

Operation

Thumbscrews at pivot points can be loosened, then tightened, to position the camera head as needed.

There are locking brakes on the wheels that may be engaged or disengaged with your foot.